

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Section 68.4(a) of the Commission's Rules,)	RM-8658
Hearing Aid-Compatible Telephones)	

COMMENTS OF VERIZON WIRELESS

Verizon Wireless hereby submits its comments in response to the request ("the Request") by the Wireless Access Coalition ("WAC") that the Federal Communications Commission ("FCC" or "Commission") re-open the Petition for Rulemaking ("Petition") filed on June 5, 1995 on behalf of the Hear-It Now Coalition. Both the Request and the Petition ask the Commission to revoke the Section 68.4(a) exception for telephones used with public mobile services from the requirement that all telephones manufactured in the United States or imported for use in the United States be hearing aid-compatible.¹

Verizon Wireless understands the needs of persons with disabilities to be able to access telecommunications products and services, including digital wireless handsets and services, on the same terms as persons without disabilities. Verizon Wireless therefore supports the joint efforts of the wireless industry, digital handset manufacturers, hearing aid manufacturers, the disabled community, and the

¹ 47 C.F.R. § 68.4.

Commission to ensure that digital wireless handsets can be used by persons with hearing aids and cochlear implants. However, as discussed below, technology has not yet advanced to the point where wireless handsets, and, in particular, digital wireless handsets, can be made hearing aid-compatible. For this reason, Verizon Wireless asserts that neither the Request nor the Petition has demonstrated that the Commission's criteria for revoking the exemption have been met. Therefore, the WAC Request must be denied.

I. HEARING AID COMPATIBILITY IS NOT TECHNOLOGICALLY FEASIBLE.

In general, a hearing aid operates by using a microphone to pick up sound waves in the air and convert the sound waves to electrical signals. The signals are then amplified as needed and converted back to audible sounds for the user to hear. The hearing aid's microphone, however, does not always work well in conjunction with audio devices like headsets and telephone handsets. The acoustic connection made between the audio device and the hearing aid is poor and creates distortions in the sound. In addition, the surrounding noise in the area of the user is often picked up by the hearing aid and interferes with the desired audio.

Since the audio signals in most devices are already electrical in nature, compatibility between such devices and hearing aids can best be achieved by introducing the signals from the device directly into the hearing aid. Therefore, in order for an audio device such as a wireless handset or telephone to be hearing aid-compatible, the device must be able to transfer audio information from the device to the hearing aid without use of the hearing aid's built-in microphone. This transfer of electrical signals is accomplished by using a telephone coil or "T-Coil." The T-coil is an

electromagnetic coil that is mounted inside both the hearing aid and the audio device such as the telephone handset.² It allows the signals to be coupled from the phone to the hearing aid without a wired electrical connection to the hearing aid and avoids the problems that microphones would have.

The T-coil is a simple electrical component that is made to pick up almost any electromagnetic energy and can not discriminate between wanted and unwanted signals. Hearing aid users that use a T-coil are not unfamiliar with other sources of interference such as fluorescent lighting, TV screens, computer monitors and other sources of electromagnetic energy. Most users know that placing some distance between the hearing aid and the source of the interference can significantly reduce or eliminate the interference.

Achieving hearing aid-compatibility in a wireless environment presents special problems. The wireless handset is a transmitter which emits electromagnetic energy. When the wireless transmitter is in close proximity to the T-coil, this energy is received by the T-coil as noise which interferes with the ability to hear desired audio signals. The extent to which a wireless transmitter interferes with a hearing aid varies depending on a number of factors. These include: the design and capabilities of the hearing aid, the amount the hearing aid amplifies the audio signal (generally the

² Hearing Aid Compatible phones require that both the hearing aid and the phone handset contain a T-coil. The hearing aid has a switch that allows the user to turn on the coil when using the phone, often referred to as the T-switch. The T-coil that is built into the phone handset is operative whenever the phone is used and does not need to be switched on.

greater the hearing loss the more the signal must be amplified and the greater the potential for interference), the distance of the transmitter from the hearing aid, the strength of the signal from the transmitter (the transmitter output generally increases as the transmitter gets further from the receiving cell site), and the wireless technology used.

Notwithstanding these factors, analog wireless handsets equipped with a T-coil can generally achieve compatibility with T-coil-equipped hearing aids with minimal interference. This is because analog phones transmit electromagnetic energy constantly at a fairly steady rate. Digital wireless handsets, on the other hand, pose greater interference problems. Unlike analog handsets, digital phones do not transmit energy constantly. Rather, these devices' transmitters turn on and off at a very fast rate. As a result, the radio energy emitted fluctuates to a much greater extent and these fluctuations cause greater interference into the hearing aid.

The degree to which digital wireless handsets can be made hearing aid-compatible depends on the presence of the factors listed above. Thus, one way for hearing aid-compatibility to be achieved for digital wireless handsets is if the hearing aid used is a hardened device that shields the T-coil from the energy emitted by the transmitter. However, since the vast majority of hearing aids in use are non-hardened, widespread compatibility is not possible at this time.

The other way for hearing aid compatibility to be achieved for digital wireless devices is for the transmitter to be kept at a distance from the hearing aid. While keeping this distance is possible for wireless devices that use an earpiece that is separated from the transmitter (such as in car kits or in hands free kits), the most

popular digital wireless devices in use today are portable wireless handsets that are typically placed directly against the ear. With these devices, hearing aid compatibility is not technologically feasible and compatibility can only be achieved by using external components.

II. NEITHER THE WAC REQUEST NOR THE PETITION MEET THE CRITERIA FOR ELIMINATING THE WIRELESS EXEMPTION.

The WAC Request and the Petition ask that the Commission eliminate the exemption from the hearing aid-compatibility requirement for telephones used with public mobile radio services. However, the WAC and the Petition fail to address at least one criterion that must be met in order to revoke the exemption.

The Commission's rules state that

The Commission shall revoke or otherwise limit the exemptions of paragraph (a)(1) of this section for telephones used with public mobile services . . . if it determines that (i) such revocation or limitation is in the public interest; (ii) continuation of the exemption without such revocation or limitation would have an adverse effect on hearing-impaired individuals; (iii) compliance with the requirements of 68.4(a)(1) is technologically feasible for the telephones to which the exemption applies; *and* (iv) compliance with the requirements of § 68.4(a)(1) would not increase costs to such an extent that the telephones to which the exemption applies could not be successfully marketed.³

Unless all of these criteria are met, the Commission may not revoke or modify the exemption.

The Request and the Petition fail to meet the Commission's criteria for revoking or limiting the exemption. Indeed, neither the WAC nor the Petition even address the current state of technology and whether hearing aid compatibility is feasible for digital

³ 47 C.F.R. § 68.4(a)(4) (emphasis added).

wireless handsets. Rather, the WAC merely argues the merits of providing hearing aid users access to digital technology without any discussion of feasibility.⁴ Similarly, although the Petition states that hearing aid-compatibility is technologically feasible, this bald assertion is followed only by a statement that options that would move the transmitter portion of the device away from the hearing aid have not been explored.⁵

As discussed above, the current state of technology does not provide any solutions that will enable digital wireless phones to be compatible with the vast majority of hearing aids. Indeed, one of the two factors that largely determines hearing aid-compatibility -- the design of the hearing aid -- is beyond the control of the wireless industry and manufacturers of wireless devices. As such, there is no basis for the Commission to revoke or even modify the Section 68.4(a) exemption for telephones used in the public mobile services. For this reason, both the WCA request and the Petition must be denied.

III. EXTERNAL DEVICES ARE READILY AVAILABLE THAT MAKE OTHERWISE NON-COMPATIBLE WIRELESS DEVICES COMPATIBLE WITH HEARING AIDS.

One key factor contributing to the interference caused by digital wireless handsets to hearing aids is the close proximity of the transmitter to the hearing aid. This interference can best be reduced or eliminated by moving the transmitter away from the ear. While most wireless devices in use today couple the transmitter with the earpiece thus requiring that the transmitter be placed directly against the ear, external

⁴ WAC Request at 3-4.

⁵ Petition at 7.

devices are generally available that can make such devices usable by persons with hearing aids.⁶ These accessories contain a T-coil in a headset or earpiece and allow users access to phones while keeping the transmitter away from the hearing aid.

One such product is a headset manufactured by Plantronics. The Plantronics headset has a microphone and earpiece just like any other headset, but also has a T-coil that makes it hearing aid-compatible. The Plantronics headset is available today and is part of Verizon Wireless' product line.

Another product that is available is the Hearing Aid Telephone Interconnect Systems (HATIS) device that is produced by the HATIS Corporation. This device is similar to a standard headset with a microphone and earpiece, however the earpiece has been replaced with a T-coil. The HATIS device has been available for many years and is known by the hearing impaired community.

Both of these products are widely available and work with wireless phones that support a 2.5 millimeter size headset Jack -- the default standard among most wireless phones. Verizon Wireless makes both products available to its customers that use hearing aids.

As the Petition acknowledges, absent a widespread effort to upgrade the hearing aids used by most hearing impaired persons, the only technologically feasible solution to make digital wireless phones hearing aid compatible is to separate the transmitter

⁶ Because in using external devices hearing aid compatibility is achieved by other than internal means, the handsets themselves are not deemed to be hearing aid compatible. See 47 U.S.C. § 610(b)(1).

from the T-coil in the earpiece and locate the transmitter away from the hearing aid.⁷

However, given most customers' desire to own and use small portable wireless devices that couple the transmitter and earpiece in one small unit, the public interest would not be served by requiring manufacturers to separate the earpiece and the transmitter in all units in the name of hearing aid compatibility.

For this reason, Verizon Wireless submits that the only way currently feasible to both retain the utility of smaller portable wireless devices and to ensure that all wireless handsets are compatible with hearing aids containing a T-coil is through external devices that can attach to wireless handsets to make the devices compatible with hearing aids. Until such time as technology evolves to provide a feasible internal solution, the Commission should not revoke or modify the Section 68.4(a) exemption.

⁷ Petition at 7.

IV. CONCLUSION

Verizon Wireless is committed to making all of its services available to every customer, including customers with hearing aids. However given the current state of technology, there is no internal solution that can be implemented into wireless handsets that can ensure that such devices are hearing aid compatible. As such, the Commission should not revoke or modify the Section 68.4(a) exemption to the hearing aid-compatibility requirement for telephones used in the public mobile services.

Dated: December 8, 2000

Respectfully submitted,

Verizon Wireless

John T. Scott, III
Vice President and Deputy General
Counsel - Regulatory Law
1001 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2595
(202) 624-2582

By _____
Andre J. Lachance
Regulatory Counsel
1850 M Street, N.W.
Washington, DC 20036
(202) 463-5276

Its Attorneys